

# STATE OF NEVADA

Department of Conservation & Natural Resources

DIVISION OF ENVIRONMENTAL PROTECTION

*Kenny C. Guinn, Governor*

*Allen Biaggi, Director*

*Leo M. Drozdoff, P.E., Administrator*

November 2, 2006

## NOTICE OF DECISION

### WATER POLLUTION CONTROL PERMIT NUMBER NEV88009

#### **Newmont Mining Corporation McCoy/CoveMine**

The Nevada Division of Environmental Protection has decided to issue renewal of Water Pollution Control Permit NEV88009 to Newmont Mining Corporation. This permit authorizes the closure of approved mining facilities in Lander County. The Division has been provided with sufficient information, in accordance with Nevada Administrative Code (NAC) 445A.350 through NAC 445A.447, to assure the Division that the groundwater quality will not be degraded by this operation and that public safety and health will be protected.

The permit will become effective **November 17, 2006**. The final determination of the Administrator may be appealed to the State Environmental Commission pursuant to Nevada Revised Statutes (NRS) 445A.605 and NRS 445A.407. All requests for appeals must be filed by 5:00 PM, **November 13, 2006**, on Form 3, with the State Environmental Commission, 901 South Stewart Street, Suite 4001, Capitol Complex, Carson City, Nevada 89706-5249. For more information, contact Karl McCrea directly at (775) 687-9407, or (775) 687-9400, or visit the Division website at <http://ndep.nv.gov/bmrr/bmrr01.htm>

Comments were received from Dr. Tom Myers on behalf of Great Basin Mine Watch. Responses have been sent to interested parties and are available on NDEP's website at <http://ndep.nv.gov/bmrr/bmrr01.htm>.

A comment letter was received via email at the close of the comment period on October 6, 2006 from Tom Myers, Hydrologic Consultant on behalf of Great Basin Mine Watch. The letter is attached to this Notice of Decision in its entirety with Division responses provided in italics.

**NDEP Response to Tom Myers comments**  
**Letter received via e-mail on October 6, 2006**  
(NDEP Responses in **bold italics**)

October 6, 2006

Mr. Dave Gaskin  
Nevada Division of Environmental Protection  
Bureau of Mining Regulation and Reclamation  
901 South Stewart Street – Suite 4001  
Carson City, NV 89701-5249

Re: Water Pollution control Permit NEV88009 Renewal  
Newmont's McCoy/Cove Mine

Faxed to: (775) 684-5259

Dear Mr. Gaskin:

Thank you for this opportunity to review the referenced water pollution control permit. As a hydrologic consultant to Great Basin Mine Watch, I am submitting these comments on their behalf. As the deadline for these comments is October 6, 2006<sup>1</sup>, they are sent timely.

I visited the NDEP offices on September 12, 2006, to review the files on this project and renewal.

There are several concerns with this permit renewal as will be outlined herein.

**(Comment 1)** The fact sheet provides acid/base accounting for the types of rock encountered, without including a tonnage for each the accounting is relatively irrelevant. The couple of types with relatively high AGP or negative NNP could cause significant problems if they are sufficiently prevalent. High AGP if not adequately mixed could cause local acid hotspots even if high NGP might lead to a positive NNP, such as found at the Rain mine.

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<sup>1</sup> Personal communication, Miles Shaw, 9/22/06.

*NDEP Response: Only one waste rock stockpile, #56/#59 contains potentially acid generating (PAG) material. As is stated on Page 2 of the Fact Sheet, "All Panther Canyon uneconomic material with the potential to generate acid was encapsulated in the #56 rock stockpile on top of approximately 135 feet of high NNP material." The PAG material was placed such that it is encapsulated by an approximate 100 foot thick 'rind' of high NNP material. The following table provides a mass balance of the encapsulated materials with the potential to generate acid:*

*Table 1 – Mass Balance of Encapsulated Materials*

	#56/#59 Rock Stockpile				Average tons CaCO <sub>3</sub> per 1000 tons			Average tons CaCO <sub>3</sub> per 1000 tons		
	4900' Lift ktons	5000' Lift ktons	5100' Lift ktons	Total ktons	AGP	ANP	NNP	AGP	ANP	NNP
<b>Intrusive</b>	10,500	2,700	3,100	16,300	36	65	29	587	1,060	473
<b>Altered Limestone</b>	25,100	7,100	1413	33,613	3	626	623	101	21,042	20,941
<b>Alluvium</b>	5,300			5,300	1	137	136	5	726	721
<b>Caetano Tuff</b>	30,000	4,600		34,600	1	14	13	35	484	450
<b>Unaltered Limestone</b>	48,800	24,000	9,295	82,095	21	610	589	1,724	50,078	48,354
<b>Carbonaceous Limestone</b>	30,000	7,500	14,419	51,919	42	526	484	2,181	27,309	25,129
<b>Oxide Panther Canyon</b>	4,200	100	1,000	5,300	3	11	8	16	58	42
<b>Sulfide Panther Canyon</b>		15,900	4,300	20,200	30	4	-26	606	81	-525
<b>Siltstone / Sandstone</b>		800	5,000	5,800	29	198	169	168	1,148	980
<b>Manganiferous Limestone</b>	4,900	500	24	5,424	1	569	568	5	3,086	3,081
<b>Totals</b>				260,551				5,428	105,073	99,645
								<b>ANP/AGP Ratio</b>		
								<b>19</b>		

**(Comment 2)** The pit lake in the Cove Pit has proven interesting in that it initially had much higher sulfate concentration and inflow rate than predicted. Because the pit wall sulfides occur at low levels, the high inflow rate probably coincided with flow through the sulfides which may have caused the initial model to underpredict sulfate concentration.

The pit lake may currently be or become a significant source of degradation to downgradient groundwater if the chemistry<sup>2</sup> does not fall within the standards. If the pit lake currently has component of through-flow, it is currently degrading local groundwater.

*NDEP Response: The higher than predicted flowrate was due to the conservative nature of the modeling in that the model did not take into account the underground workings. The workings were backfilled with a mixture of SAG mill rejects and cement, resulting in a high-quality backfill material having a very porous nature. These backfilled workings resulted in preferential flow paths for groundwater to enter the pit. The model utilized hydraulic conductivity (transmissivity) values ranging from 0.5 to 3.0 ft/day for the native wall rock whereas that of the backfill material is 30 ft/day. Overall, this resulted in rapid flooding of the sulfide material in approximately one-half the amount of time as initially predicted and in turn resulted in the sulfide reaction by-products, i.e. – sulfate, being flushed out more rapidly. Although stated as being underpredicted, comparison of the estimated (modeled) concentration after 1 year of filling closely matches that of the actual observed concentration. A point that must be made is that the commentor compares current pit water quality of the juvenile pit lake to the long-term modeled data without making it clear that the model represents the pit lake quality at steady state conditions, predicted to occur in approximately 100 years. The pit lake has been filling for approximately 5 years.*

*All pre-2002 Cove Pit Lake water quality predictions were based on the pit lake at 90% fill. The 2002 water quality prediction did include a water quality estimate of the initial waters, as shown below in Table 2:*

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<sup>2</sup> Letter from Eric Daniels, McCoy Cove Mine to Mr. Karl McCrea, NDEP, dated July 20, 2006. Re: McCoy/Cove Mine, WPCP #NEV88009; Request for Monitoring Reduction. This letter has a table of Cove Pit Lake water quality attached to it.

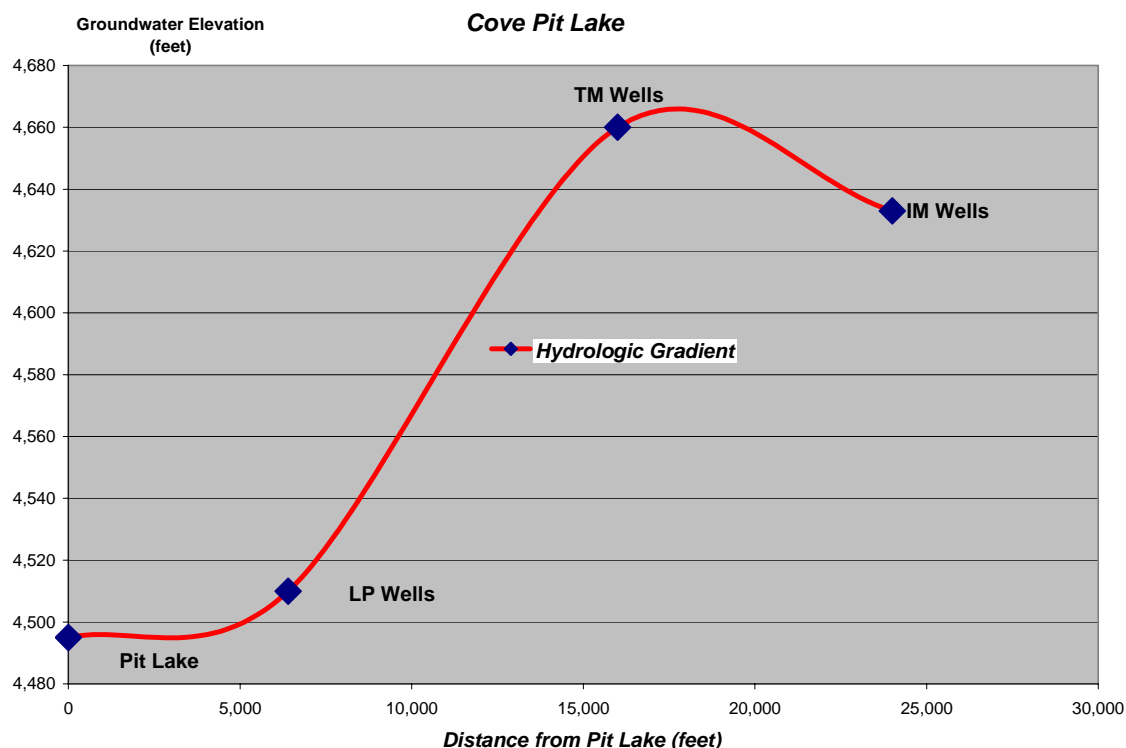
*Table 2 – Cove Pit Lake Water Quality at One Year – Actual vs. Modeled*

<b>Parameter</b>	<b>Measured Values (October 2001)</b>					<b>1 Year</b>
	<b>North Lake</b>	<b>Mid Lake</b>			<b>South Lake</b>	<b>Modeled</b>
	<b>Surface</b>	<b>Surface</b>	<b>Middle</b>	<b>Bottom</b>	<b>Surface</b>	<b>Value</b>
<i>Alkalinity</i>	175	174	172	169	171	4
<i>Aluminum</i>	<0.02	<0.02	<0.02	<0.02	<0.02	0.0001
<i>Antimony</i>	0.005	0.006	0.005	0.005	0.005	0.02
<i>Arsenic</i>	0.03	0.02	0.03	0.03	0.03	0.04
<i>Barium</i>	0.045	0.045	0.045	0.045	0.044	0.01
<i>Beryllium</i>	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
<i>Boron</i>	0.55	0.57	0.61	0.55	0.56	0.77
<i>Cadmium</i>	0.033	0.034	0.034	0.034	0.032	0.35
<i>Calcium</i>	338	348	372	341	353	259
<i>Chloride</i>	81.6	80.0	81.2	80.8	81.6	74
<i>Chromium</i>	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006
<i>Copper</i>	0.003	<0.003	<0.003	0.006	<0.003	0.01
<i>Fluoride</i>	1.2	1.0	1.0	1.2	1.0	1.2
<i>Iron</i>	<0.02	<0.02	<0.02	<0.02	0.19	0.004
<i>Lead</i>	<0.005	<0.005	<0.005	<0.005	<0.005	0.001
<i>Magnesium</i>	103	105	113	104	106	81
<i>Manganese</i>	9.66	9.92	10.6	9.8	10.2	7.77
<i>Mercury</i>	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
<i>Nickel</i>	0.36	0.37	0.37	0.37	0.35	0.25
<i>pH</i>	7.38	7.41	7.42	7.33	7.44	6.60
<i>Potassium</i>	12.7	12.9	13.9	13.3	12.9	9.2
<i>Selenium</i>	<0.01	<0.01	<0.01	<0.01	<0.01	0.001
<i>Silver</i>	<0.005	<0.005	<0.005	<0.005	<0.005	0.01
<i>Sodium</i>	118	121	130	119	121	130
<i>Sulfate</i>	1,240	1,240	1,230	1,230	1,240	1184
<i>TDS</i>	2,230	2,000	2,010	2,000	2,250	NA
<i>Thallium</i>	0.002	0.002	0.002	0.002	0.001	<0.001
<i>Zinc</i>	12.1	12.4	12.3	12.3	12.3	33.8

*The above table demonstrates a good correlation between the estimated (1 year model) expectations and actual observations.*

**(Comment 3)** Because there is insufficient monitoring of groundwater levels near the pit lake, it is not possible to determine groundwater contours and gradients near the pit. Without this type of monitoring, it is not possible to determine whether the pit lake is currently a throughflow system or not.

*NDEP Response: Comparison of pit lake levels and groundwater levels from site monitor wells, LP-2B, LP-5B, TM-3, 4 & 5 and IM-2 & 3, clearly show a steep gradient toward the pit lake. Groundwater at the leach pad wells is at an elevation of 4510 feet amsl, the tailings impoundment at 4660 feet amsl and 4633 feet amsl at the IM wells, whereas the pit lake level is currently 4495 feet amsl – indicating groundwater gradients ranging from 15 feet to 165 feet. See graph below. Current measurements indicate the pit lake is filling at approximately 2,000 gallons per minute.*



**(Comment 4)** In the long-term steady state conditions, the pit lake will probably not be a terminal lake as assumed in the fact sheet; there will likely be substantial throughflow. This is based on the small amount of expected drawdown in the steady state lake. NDEP expects the pit lake water level to be only 20 feet below the pre-mining groundwater level; presumably this is based on groundwater modeling. Considering the location of the pit at the juncture of alluvium and bedrock at the base of the mountains, it is likely that the pre-mining groundwater level dropped more 20 feet across the 160 acre pit. As stated in the fact sheet, the “quantification of this gradient is beyond the sensitivity of the hydrologic model” (Fact Sheet, page 4). If it is beyond the sensitivity of the model to simulate, it should not be assumed that the steady state (or current) conditions will be a terminal lake. A 20-foot drop across this pit would be a small gradient. (Note also that it is not specified

whether the pre-existing groundwater level considered by NDEP in this statement is an average or the level seen on one side of the pit.)

*NDEP Response: The commenter has not supported the statement of substantial outflow from the pit lake. As the fact sheet stated, the bedrock aquifer is filling the pit and a hydrologic barrier formed by the Valley Fault, exists on the east side of the pit. The hydrologic investigations that form the basis of both the regional hydrologic impact and water chemistry of the resulting pit lake describe a slight pre-mining raise in static water level across the Cove Pit from the east towards the west. Also see Response to Comment 3.*

*Regarding the sensitivity of the model, early groundwater flow modeling predicted a flow-through system ranging from 2 to 15 GPM. Given the estimated evaporation rate of 335 GPM, this slight amount of flow is well within seasonal variations of precipitation and evaporation, therefore, considering the difference in the predicted flow-through versus evaporation rate, which yields 320 GPM as evaporation, the pit lake will have a slight inward hydrologic gradient (sink) based on pre-mining groundwater levels and steady state conditions.*

*Figure 10 in the 2001 Update of Numerical Ground-Water Flow Modeling For McCoy/Cove Mine, clearly shows the Valley Fault on the east side of the McCoy pit running north-south.*

**(Comment 5)** The pit lake has filled much faster than expected as well because the inflows have been twice the predicted rate<sup>3</sup>. The inflow is likely from the bedrock on the uphill side of the pit. The inflow currently substantially exceeds the outflow which causes the pit lake level to rise. The lake level is likely higher than the groundwater level on the downhill side of the pit and is possibly in alluvium, which is probably not contributing inflow to the pit because any local recharge into the alluvium would likely follow the local topography and flow towards the Reese River. Because the pit lake has risen quicker than the groundwater would have likely recovered below the pit, it is likely there is currently flow through the pit. Because of the current lousy water quality<sup>4</sup>, it is probable that there is ongoing degradation.

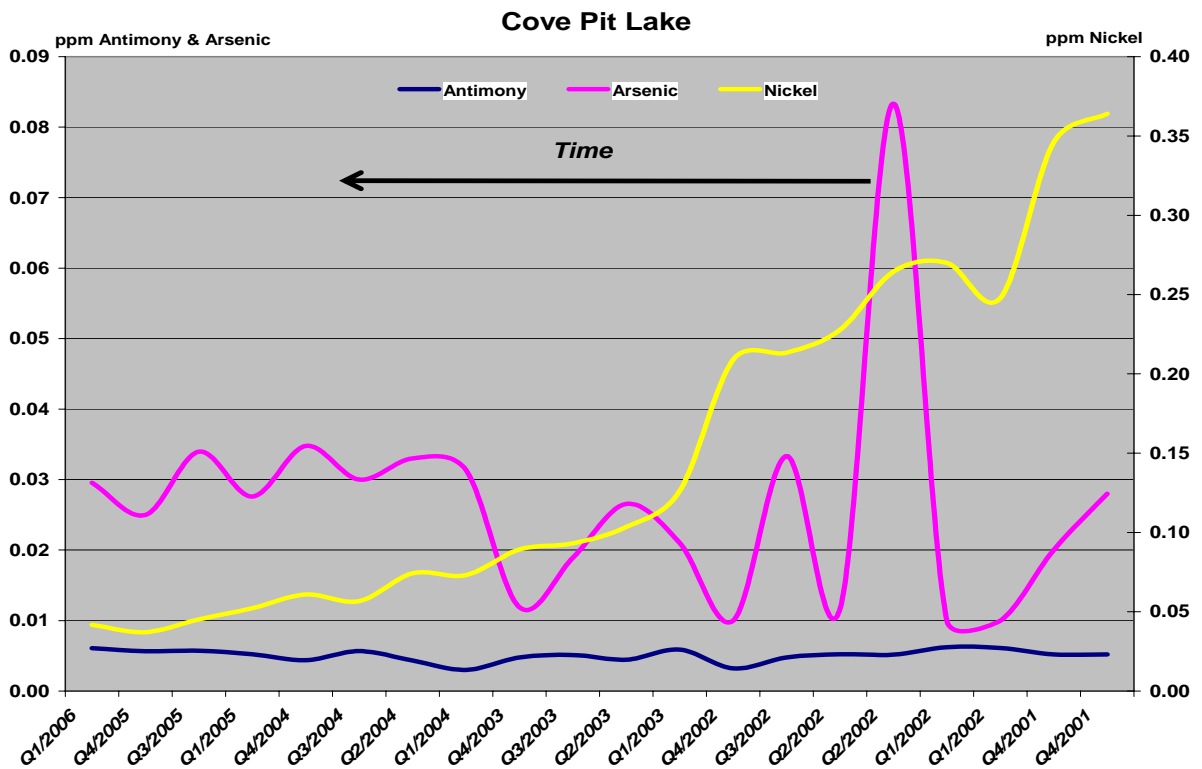
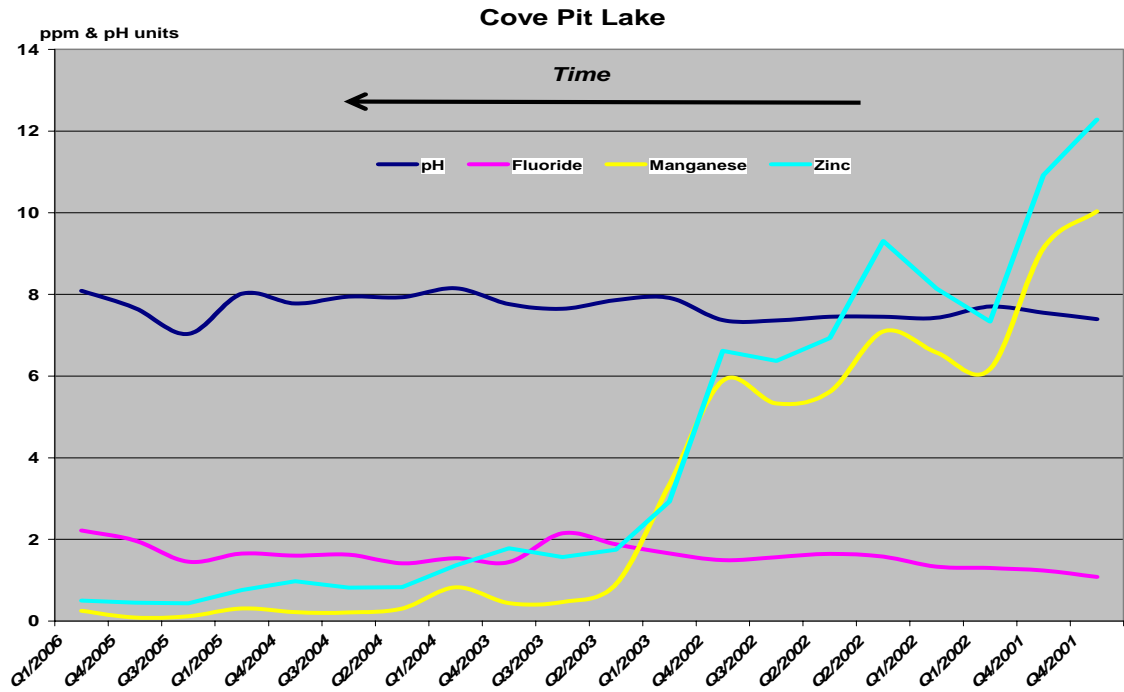
*NDEP Response: The above mentioned Valley Fault hydrologic barrier, which precludes flow from the shallow alluvial aquifer, will also inhibit flow from the pit lake. The transmissivity through that section is approximately 0.0033 feet per day. The lake level will not reach the alluvium, but will be bound mostly by Smelser Pass limestone.*

*As shown graphically below, the water quality in the pit lake has demonstrated significant improvement over a very short life to-date and generally meets the Nevada Profile I reference values.*

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3 Letter from Eric Daniels, McCoy Cove Mine to Mr. Karl McCrea, NDEP, dated July 26, 2006, Re: McCoy/Cove Mine: WPCP#NEV88009; Renewal; Request for Information per Email Message, dated July 25, 2006.

4 See note 2.



**(Comment 6)** The fact sheet provides data from the 2002 pit lake model<sup>5</sup> that suggests the current exceedences within the lake water column will disappear at the 100 year point of pit lake development. TDS, sulfate and manganese all violate the NDEP standards, although their trend is slightly downward. Disturbingly, arsenic concentrations are trending up, increasing from 0.021 to 0.030 between 2003 and 2006. Fluoride concentrations have trended up from 1.6 in the early 2000s to 2.22 in 2006. These exceed national standards and will exceed Nevada standards in about 10 years if current trends continue. Concentrations of antimony also are slightly exceeding standards.

*NDEP Response: The pit lake water quality predicted for the long- term is very good and is expected to meet all NDEP Profile I reference values. Should empirical pit lake water quality deviate from the model, the operator may be required to act. This condition is a WPC Permit Schedule Of Compliance item.*

**(Comment 7)** Newmont apparently wants to decrease sampling frequency. In light of the upward trends and exceedences listed above, it would be better to reestablish quarterly sampling and add a schedule of compliance item that requires Newmont to recalibrate its model to consider the trends in arsenic, antimony and fluoride discussed above.

*NDEP Response: The decision to approve a decrease in sampling frequency is based on the past five years of quarterly monitoring that indicate the pit lake water quality is fairly stable. See also response to Comments 5 and 6.*

*Page 2 Section I.B of the Water Pollution Control Permit renewal already includes an Schedule Of Compliance to update the pit lake model in the event of significant changes to the chemistry or if empirical data skews from modeled data.*

**(Comment 8)** As established above, it is unlikely that the lake will be a sink, therefore Newmont and NDEP should not rely on the lake holding constituents. If Newmont desires to prove that it is a terminal lake, a series of a dozen or more monitoring wells should be established around the perimeter and out to about 2 miles from the pit, with dual completion in bedrock and alluvium (where it occurs) so that the water table contours may be determined and the flow gradient to or from the pit lake may be determined. It is ONLY with this kind of data that it can be proven there will be no through-flow. With the current chemistry, this pit lake presents a potential to degrade groundwater as long as it is a through-flow system. Unless this can be established, Newmont should also consider a plan, and present it as a schedule of compliance item, to treat the pit lake for arsenic and other contaminants for use when they begin to exceed standards and degrade surrounding groundwater.

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<sup>5</sup> This model has apparently been re-calibrated to address the high initial sulfate values.

*NDEP Response: If the long-term pit lake water quality is as modeled, a minor flow thru component would therefore not degrade Waters of the State. The current monitoring program is quite adequate to demonstrate that the pit lake water does not adversely affect the health of human, terrestrial or avian life or degrade the Waters of the State. Also see Response to Comment 3.*

**(Comment 10)** The fact sheet indicates that if accessibility to the pit lake prevents actual monitoring that other means, preferably “empirical”, may be used instead of sampling. What is meant by empirical? Failure to sample in this case, with many exceedences of standards and increasing concentrations, is absolutely unacceptable. Newmont should be required to land a helicopter with floats if necessary to collect the proper **quarterly** samples.

*NDEP Response: NDEP believes that the sampling and collection of site specific data will be required into the long term. As a note, Newmont has recently constructed an alternate access route to the pit lake.*

**(Comment 11)** The fact sheet provides Table 4 listing the chemistry for Leach Pads 1-3 and the tailings reclaim and claims they “all exhibit very similar chemistry” and claim it is “due to the commingling of heap process solutions and TSF solutions during operations” (Fact sheet, page 7). Table 4 in the fact sheet however shows substantial differences in the chemistry. Arsenic is 0.115, 0.433, and 0.273 mg/l in leach pads 1 to 3, respectively, and only 0.0196 mg/l in the tailings reclaim. Selenium concentration in the leach pads is 0.126, 0.178, and 0.197 mg/l, respectively, and only 0.0797 mg/l in the tailings reclaim. Nitrate values are extremely high and in the leach pads are almost twice that in the tailings reclaim. The tailings impoundment has three wells monitoring the shallow groundwater and the leach pads have none, although contaminant concentrations in the leach pads are high.

*NDEP Response: This statement was included to show that the chemistry of the four components is of a similar composition and that concentrations do not vary by multiple magnitudes. Regardless, all solutions will remain on containment and the WPCP will remain as a zero-discharge permit. Comments noted.*

*Aside from permit limitation exceedances in the leak detection sumps of P1-BP and P2-EP reported in the first quarter of 2003, annual and quarterly reports dating back from the beginning of operations do not indicate any leakage occurring at the leach pads, collection channels or process ponds. There is no evidence to suggest that groundwater beneath these components is contaminated and additional monitoring wells are not warranted at this time.*

**(Comment 12)** The leach pads will eventually drain their seepage into ET cells constructed from sediment and reclaim ponds. ET cells are an acceptable solution for long-

term seepage, however they must be properly sized. There are no calculations to suggest the ET cells will be large enough to evaporate the long-term seepage. Based on the leach pad draindown quality and the depth to groundwater, it would present a significant potential to degrade groundwater to allow heap seepage to discharge to a leach field or otherwise discharge to the vadose zone underlying the leach pads. Considering the quality of the draindown, it is also essential that the closure include plans to manage the ET cell in perpetuity including the removal and disposal of the hazardous sludge which will undoubtedly accumulate at the bottom of the cell.

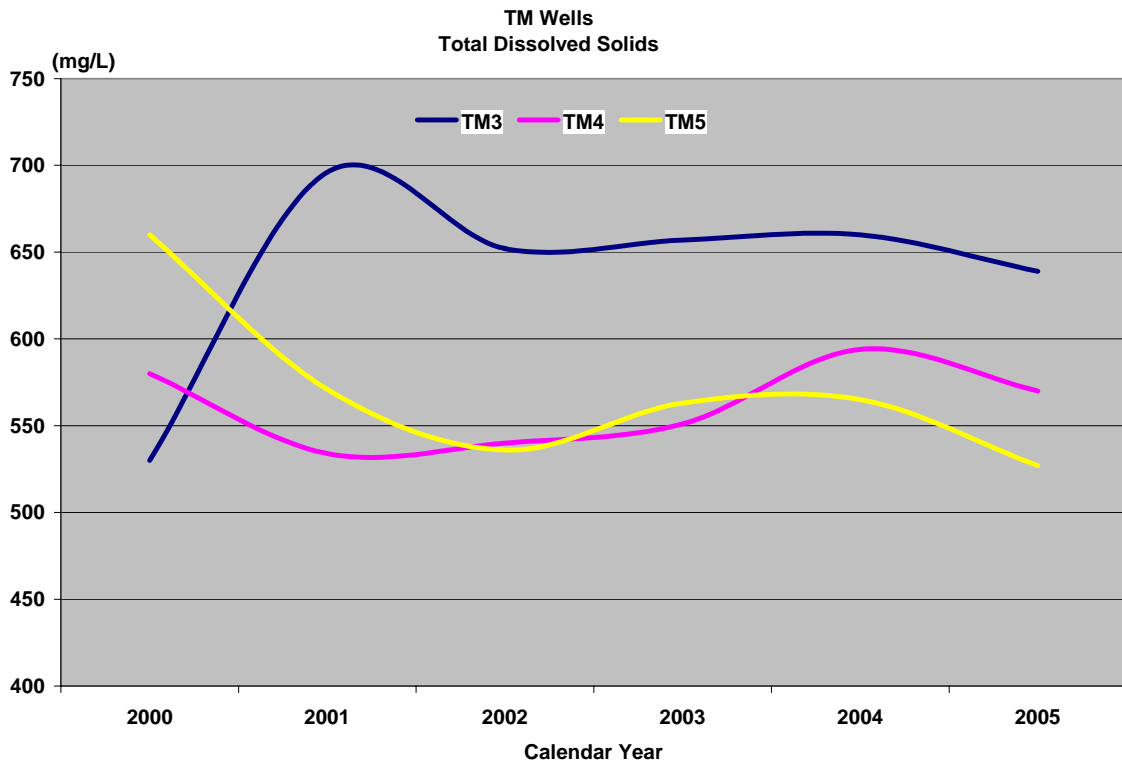
*NDEP Response: The operator will be required to provide adequate long-term surety for maintenance and operation of all ET cells.*

**(Comment 13)** The sampling regime as presented in the fact sheet and permit is grossly insufficient. Based on maps obtained from the file (unreferenced drawing on what appears to be a 1:24000 scale USGS topographic map), monitoring wells IM3 and IM2 line in section 20 about two miles northeast of a waste rock dump. The fact sheet describes them as “hydrologically downgradient” and they “monitor the shallow alluvial groundwater flow” (Fact Sheet, page 11). Being 2 miles from the nearest mine facility, it is very possible that any contaminant plumes have not reached these wells.

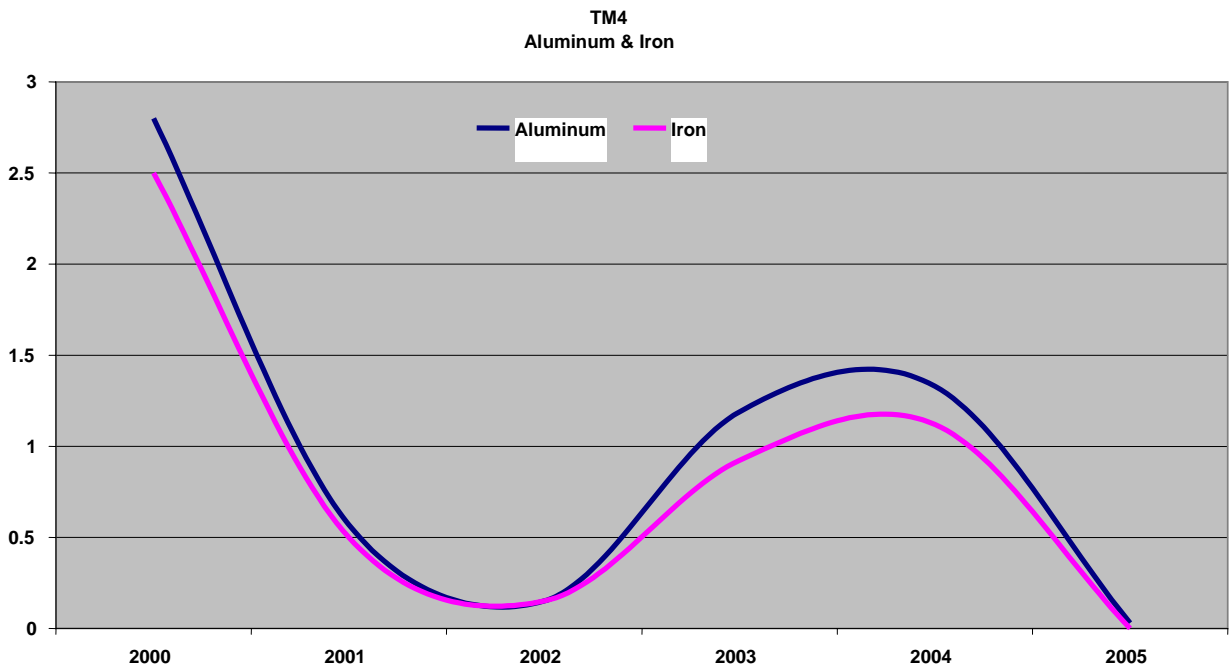
*NDEP Response: Monitor wells IM-2 and IM-3 have provided valuable ground water static water levels and background water quality. They were not intended to detect ground water contamination.*

**(Comment 14)** The three tailings monitoring wells, TM-3, TM-4 and TM-5, are just downgradient of the tailings impoundment and provide a means to monitor the upper 30 feet of shallow groundwater. The location and screens of these wells appears to be adequate. However, there may be some exceedences or increasing trends in parameter concentrations that NDEP should consider (even if they do not yet represent standard exceedences, they indicate an upward trend may be occurring.) Based on the 2003 annual report (the most recent one found in the files), at TM3, TDS appears to be increasing. At TM4 aluminum has exceedences for four years and iron does for three of four years.

*NDEP Response: Provided below is a graph of TDS for the TM wells for the last six years which show decreasing trends.*



*Regarding aluminum and iron, the following graph is being provided. Due to the excellent correlation between the two parameters, this is most likely due to the pump. TM4 has a dedicated pump unlike TM3 and TM5.*



**(Comment 15)** At the Filippini Stock water well, aluminum and iron were both fairly high and could be trending upward. Zinc concentrations in 2003 were three times that in 2000, although they do not yet exceed standards. It appears that well is no longer sampled; NDEP should explain what has been done to assure that these trends do not represent a long-term problem

*NDEP Response: The Filippini stock well is located approximately 6 miles northeast of the minesite and was monitored to provide regional native water quality information. As the name implies, this is a stock watering source, and as such, is held to much different standards. Additionally, water quality samples were collected from an unsecured steel discharge pipe, which is the most likely explanation for the increasing aluminum, iron and zinc concentrations.*

On behalf of Great Basin Mine Watch, thank you for considering these comments.

Sincerely,

A handwritten signature in black ink, appearing to read "Tom Myers". The signature is fluid and cursive, with a large initial "T" and "M".

Tom Myers, PhD  
Hydrologic Consultant

Cc:

Nicole Rinke  
Glenn Miller  
Dan Randolph  
John Hadder